

Critical Illness Hyperglycemia in Pediatric Cardiac Surgery

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Abstract

Critical illness hyperglycemia (CIH) is common in pediatric and adult intensive care units (ICUs). Children undergoing surgical repair or palliation of congenital cardiac defects are particularly at risk for CIH and its occurrence has been associated with increased morbidity and mortality in this population. Strict glycemic control through the use of intensive insulin therapy (IIT) has been shown to improve outcomes in some adult and pediatric studies, yet these findings have sparked controversy. The practice of strict glycemic control has been slow in extending to pediatric ICUs because of the documented increase in the incidence of hypoglycemia in patients treated with IIT. Protocol driven approaches with more liberal glycemic targets have been successfully validated in general and cardiac critical care pediatric patients with low rates of hypoglycemia. It is unknown whether a therapeutic benefit is obtained by keeping patients in this more liberal glycemic control target. Definitive randomized controlled trials of IIT utilizing these targets in critically ill children are ongoing.

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Abbreviations: (CIH) critical illness hyperglycemia, (CPB) cardiopulmonary bypass, (ICU) intensive care unit, (IIT) intensive insulin therapy, (NO) nitric oxide, (TGC) tight glycemic control

Keywords: children, congenital heart defects, critical illness, glycemic control, hyperglycemia, insulin

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